Sherbornina: A new Genus of the Foraminifera from Table Cape, Tasmania.

By Frederick Chapman, A.L.S., F.R.M.S., Palæontologist to the National Museum, Melbourne; Hon. Pal. Geol. Surv. Vict.

(Plate 32.)

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History of the Specimens.—Early in 1912 I received from the late Mr. R. N. Atkinson *, of Sulphur Creek, N.W. Tasmania, some foraminifera obtained from the Tertiary beds at Table Cape, Wynyard, Tasmania. Recognising their novel character, I put them aside for further investigation, and their description has been still further delayed owing to their requiring to be sliced, a work which had to be postponed on account of the lack of specimens. Mr. Atkinson's father, Mr. E. D. Atkinson, has lately obtained additional specimens, and to him I express my indebtedness.

Geological Horizon of the Foraminifera.—The tests of this type, of which a fair number have been found, have all occurred in the *lower* zone of the Table Cape fossil deposits—the *Crassatellites* Bed. The presence of *Crassatellites oblonga*, T. Woods, sp., and the various volutes determine the age of this bed as Janjukian, which is equivalent to the Middle Tertiary stage of the southern Australian Tertiaries and to the Miocene elsewhere. It lies below the *Turritella* Bed containing *Turritella warburtonensis*, Tate, and the interesting marsupial *Wynyardia bassiana*, Spencer †. That upper bed may be regarded as of Upper Miocene age, since it appears to represent the upper beds at Torquay.

Description :—

Fam. ROTALIIDÆ.

Subfam. Rotaliinæ.

Genus Sherbornina ‡, gen. nov.

Generic Characters.—Test discoidal, moderately thin; median arch concave. Shell built up of a median annular series of chamberlets with a discorbine commencement; the loculi of the annuli widely spaced. External

* Mr. R. N. Atkinson, after whom I have named the species here described, was a keen and observant collector of the Tertiary fossils of Table Cape. He unfortunately met with an untimely death in 1915, whilst cleaning a military rifle.

† Proc. Zool. Soc. Lond. 1902, pp. 776–794, pls. xlix. & l.

‡ Named in honour of my friend Charles Davies Sherborn, Hon.F.Z.S., A.L.S., who has contributed so much to the literature of this group.

layer formed of small overlapping spatulate chamberlets. The primordial series of about 7 globular to reniform segments, lying in the median system, is discorbine—that is, depressed rotaline. Shell-wall perforated with coarse tubuli.

SHERBORNINA ATKINSONI, gen. et sp. nov. (Plate 32.)

Description of Species.—Test discoidal, thin, complanate. Median area depressed. Texture subtranslucent. Surface faintly showing the annular series of the median layer with the crenulations of the superimposed spatulate chambered layer on either side. A thin median horizontal section shows the commencing series as a discorbine shell of about 7 chambers, followed by 4 imperfectly annulate series, the last two almost completely ring-like and embracing the earlier series. Primordial chamber spherical, measuring 58 μ in diameter; chambers 2, 3, and 4 subglobular, 5–9 sublunate, 10 and 11 subannulate and of equal width throughout *. Chamberlets of superficial layers spatulate and squamosely arranged. Diameter of test in holotype 1·9 mm. Thickness of test on periphery ·25 mm. Thickness in median area ·09 mm. Diameter of another specimen 2·3 mm.

Relationships.—This very remarkable form represents for the Rotaliidæ the cycloclypeine annulate multichambered character combined with the lepidocycline spatulate-chambered type found in the Nummulinidæ. But instead of the lepidocycline character being found in the median layer, it is here, strangely enough, found superimposed on the cycloclypeine median series, to form a complex unrecognized in the Orbitoidinæ. This structure of both median and external layers is merely *isomorphous* with the *Cycloclypeus* and *Lepidocyclina* groups, as proved by the commencing series, which is distinctly rotaline, and especially discorbine.

The true relationship of this generic type lies with the planorbuline group, of which a remarkable and allied generic type, *Cycloloculina*, has been described by Messrs. Heron-Allen and Earland †. The present specimens show the same stages of development for the median series of chambers—the discorbine, the pavonine, and the annulate. As in *Cycloloculina*, the tubuli in *Sherbornina* are fairly coarse perforations, and the "deposit of shell-substance between the tubuli" noted by Heron-Allen and Earland in *Cycloloculina* appear to have developed in the present form into small scale-like chamberlets forming the external layers, besides which there is also the crenulate and warty appearance of the surface seen also in *Cycloloculina*. As in *Cycloloculina*, *Sherbornina* has no distinct apertural orifice beyond the openings on the face and periphery leading through the coarse tubuli to the chamberlets.

* In this character *Sherbornina atkinsoni* resembles *Cycloloculina annulata* rather than *C. polygyra* of Heron-Allen and Earland. See *postea* and Journ. Roy. Micr. Soc. 1908, pp. 536 and 538.

† Journ. Roy. Micr. Soc. 1908, pp. 529–543, pl. xii.

1 × 21

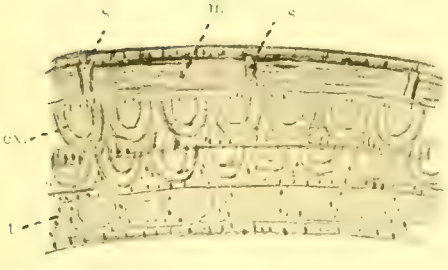
3

× 34

2 × 24

4

× 68



5

× 72

F. C. phot. et del. ad nat. Oxford University Press, ads.

SHERBORNINA ATKINSONI. F. Chapm.

Age-relations of Cycloloculina *and* Sherbornina.—Messrs. Heron-Allen and Earland obtained their specimens of *Cycloloculina* from amongst derived fossils from Tertiary strata at Selsey. The majority of the fossils found there are, however, of Middle Eocene age, so that the greater chances point to that rock-series as their source of origin. The present Miocene *Sherbornina* seems to be a distinct modification of *Cycloloculina* through the accession of secondary shell-growth and the development of external chamberlets superimposed on the median series.

Occurrence.—Moderately common. In the *Crassatellites* Bed of Wynyardi, Table Cape, Tasmania.

Age.—Miocene or Janjukian.

EXPLANATION OF PLATE 32.

Fig. 1. *Sherbornina atkinsoni*, gen. et sp. nov. Holotype. Miocene (Janjukian). Table Cape, Tasmania. External surface of test showing annulate plan of growth overlain with tegulous layer of secondary chamberlets. × 21.

Fig. 2. *S. atkinsoni.* Horizontal section through median plane, showing the discorbine stage passing into the annulate series. The widely-spaced partitions of the annulate series of chamberlets are seen near the centre and also towards the periphery. The tegulate or overlapping chamberlets of the secondary or external layer are seen halfway to the centre of the test. × 24.

Fig. 3. *S. atkinsoni.* Vertical median section through test, showing the relation of the median to the external series of chamberlets. × 34.

Fig. 4. *S. atkinsoni.* Structural sketch drawn from micro-section. *m.*, loculi of median series connected by coarse tubules; *ex.*, loculi of external series. × 68.

Fig. 5. *S. atkinsoni.* Structural sketch drawn from micro-section. *m.*, loculi of median series; *ex.*, loculi of external series; *s.*, septa of median series; *t.*, shell-wall between median and outer chamberlets, showing coarse perforations. × 72.